REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 5, and 7-24 are pending; Claims 1, 5, 7-12, and 24 are presently active; Claims 13-23 have been withdrawn; Claims 1 and 5 are amended; and Claims 2-4 and 6 are cancelled by the present amendment.

Claim 1 is amended to incorporate the subject matter from original Claims 2-4. Claim 5 is amended to incorporate the subject matter from original Claim 6. Thus, no new matter is added.

Changes to Figure 6 address minor informalities. Thus, no new matter is added.

The outstanding Official Action objected to the specification; objected to claim 3; objected to Claims 5, 6, and 24 under 37 C.F.R. § 1.75 as a substantial duplicate of Claims 1, 2, and 10; rejected Claims 1-3, 5-12, and 24 under 35 U.S.C. § 102(a) as unpatentable over U.S. Patent No. 6,969,622 to Kokubo et al. (hereinafter "Kokubo"); rejected Claims 1-3, 5, and 6 under 35 U.S.C. § 102(e) as unpatentable over U.S. Patent No. 7,059,874 to Weiss; and rejected Claim 4 under 35 U.S.C. § 103(a) as unpatentable over Kokubo in view of U.S. Patent No. 6,168,442 to Naoi.

The specification is amended as suggested by the outstanding Official Action. Additional amendments to the specification are made addressing minor informalities. No new matter is added.

In response to the objection to Claim 3, amended Claim 1 recites that "the surface electrode portion and the back electrode portion are coupled integrally through the short circuit portion." Thus, the claims are amended as suggested by the outstanding Official Action.

Applicants respectfully traverse the objection of Claims 10 and 24 under 37 C.F.R. § 1.75 for the following reasons. Claim 10 is directed to an anisotropic conductive connector device and recites that "the sheet-like connector is disposed on one surface side placed in contact with the circuit device to be the inspecting object." Claim 24 is directed to an apparatus for inspecting a circuit device and recites that "the anisotropic conductive connector device according to claim 1 which is disposed on the circuit board for an inspection." As Claim 10 recites that *the sheet-like connector* is placed in contact with the *circuit device* and Claim 24 recites that the *anisotropic conductive connector* is disposed on the *circuit board*, Applicants submit that Claims 10 and 24 recite different features. Thus, Applicants request that the objection to Claims 10 and 24 under 37 C.F.R. § 1.75 be withdrawn.

Applicants submit that the remaining objections of the claims under 37 C.F.R. § 1.75 are rendered moot by the present amendment. Assuming *arguendo* that the objections under 37 C.F.R. § 1.75 are not rendered moot by the present amendment, Applicants respectfully traverse this objection for the following reasons.

According to MPEP § 2111.02(iv), Applicants are permitted to be their own lexicographer. Accordingly, Applicants submit, in light of the specification and following discussion, that the term "integrally on" as recited in Claim 1 is different than the term "integrated on" as recited in Claim 5.

Amended Claim 1 recites that

> ...the sheet-like connector is provided integrally on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film,
>
> the sheet-like connector is provided with a through hole penetrating through both sides of the insulating sheet and the electrode structure is provided in the through hole...

As shown in Applicants' Fig. 3, the anisotropic conductive connector device 10 is constituted by a rectangular anisotropic conductive film 10A, a sheet-like connector 20 provided integrally on one surface of the anisotropic conductive film 10A and a rectangular plate-shaped supporting body 30 which supports the anisotropic conductive film 10A.

That is, the sheet-like connector 20 is provided integrally on the anisotropic conductive film 10A in such a manner that each of the electrode structures 22 is positioned on the effective conducting path forming portion 12 of the anisotropic conductive film 10A and the protruded portion 15 for coupling in the anisotropic conductive film 10A is inserted in the through hole 26 for coupling in the insulating sheet 21.

More specifically, in the state shown in Applicants' Fig. 16, a parallel magnetic field having an intensity distribution, that is, a parallel magnetic field having a high intensity between a ferromagnetic layer 52 of an upper mold 50 and a ferromagnetic layer 57 of a lower mold 55 corresponding thereto is caused to act in a direction of a thickness of the molding material layer 19.[1]

As a result, as shown in Applicants' Fig. 17, in a molding material layer 19, the conductive particle dispersed in the molding material layer 19 is collected in the portion, which is to be a conducting path forming portion 11 (see Figure 3) positioned between each ferromagnetic layer 52 of the upper mold 50 and the ferromagnetic layer 57 of the lower mold 55 corresponding thereto. Furthermore, the conductive particle is oriented to be arranged in the direction of the thickness of the molding material layer 19.[2]

In this state, the molding material layer 19 is subjected to a curing treatment. Consequently, the anisotropic conductive film 10A having the conducting path forming portion 11, which is filled densely with the conductive particle in the elastically polymeric

[1] See specification at page 62, lines 17-23.
[2] See specification at page 62, line 24 to page 63, line 7.

substance in an arranging and orienting state in the direction of the thickness, and having the insulating portion 14 formed of an insulating elastically polymeric substance, which is formed to surround the conducting path forming portion 11, and in which the conductive particle is not present at all or is rarely present, is formed in a state in which the sheet-like connector 20 is integrally bonded to a surface thereof and a peripheral portion thereof is fixed to and supported on the supporting body 30.[3]

According to the anisotropic conductive connector device 10 in accordance with amended Claim 1, the sheet-like connector 20 is provided integrally on the anisotropic conductive film 10A. Therefore, it is not necessary to align the sheet-like connector 20 with the anisotropic conductive film 10A. Even if the pitch of the electrode that is a connecting object is small, an excellent electrical connection state can be obtained.[4] In addition, also in the case of repetitive use for a long period of time or the case of use in a high temperature environment, the positional shift of the conducting path forming portion 11 from the electrode structure 22 can be prevented from being generated.[5] Accordingly, it is possible to maintain a stable and excellent electrical connection state.

Moreover, the protruded portion 15 for coupling, which is formed on the anisotropic conductive film 10A, is inserted in the through hole 26 for coupling which is formed on the insulating film 21 in the sheet-like connector 20. Therefore, the positional shift of the conducting path forming portion 11 from the electrode structure 22 can be more reliably prevented.

Amended Claim 5 recites

> ...the sheet-like connector is integrated on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film, and

[3] See specification at page 63, lines 9-20.
[4] See specification at page 12, lines 1-4.
[5] See specification at page 55, lines 17-22.

the sheet-like connector is provided with a void communicating with both sides of the insulating sheet and the electrode structure is provided in the void.

Contrary to the description above for amended Claim 1, the anisotropic conductive connector device 10 according to the amended Claim 5 is constituted by a rectangular anisotropic conductive film 10A, a sheet-like connector 20 integrated on one surface of the anisotropic conductive film 10A, and a rectangular plate-shaped supporting body 30, which supports the anisotropic conductive film 10A.

That is, a material, which constitutes an anisotropic conductive film, or an adhesive, which bonds the anisotropic conductive film and the sheet-like connector, are cured in a permeation state into the void of the insulating sheet 21, which is composed of the mesh or nonwoven fabric. Therefore, the sheet-like connector 20 is integrated on the anisotropic conductive film 10A. Thus, the sheet-like connector is integrated with the anisotropic conductive film thereon, where both the sheet-like connector and the anisotropic conductive film cannot be moved to mutually different positions.

More specifically, to manufacture the anisotropic conductive connector device 10, as shown in Figs. 38-39, in a state in which the sheet-like connector 20 is disposed on a molding material layer 108 for forming the anisotropic conductive film 10A, a material constituting the anisotropic conductive film is cured in a permeation condition into the void of the insulating sheet 21. Consequently, the molding material layer 10B is subjected to a curing treatment. Thus, it is possible to advantageously and reliably manufacture the anisotropic conductive connector device 10 in which the sheet-like connector 20 is integrated on the anisotropic conductive film 10A.[6]

Therefore, according to the anisotropic conductive connector device 10 of Claim 5, it is not necessary to align the sheet-like connector 20 with the anisotropic conductive film

[6] See specification at page 75, lines 4-13.

10A. Even if the pitch of an electrode to be a connecting object is small, consequently, an excellent electrical connection state can be obtained.[7] In addition, also in the case of repetitive use for a long period of time or the case of use in a high temperature environment, the positional shift of the conducting path forming portion 11 from the electrode structure 22 is not generated.[8] Accordingly, it is possible to maintain a stable and excellent electrical connection state.

Moreover, the insulating sheet 21 in the sheet-like connector 20 is constituted by the insulating sheet 21 formed by the mesh, the nonwoven fabric or the porous sheet in which the void communicating with both sides of the insulating sheet is formed. Therefore, the positional shift of the conducting path forming portion 11 from the electrode structure 22 can be prevented. [9]

Accordingly, Applicants submit that in light of the above discussion, the terms "provided integrally on" as recited in Claim 1 is different than the terms "integrated on" as recited in Claim 5. Thus, Applicants submit that the anisotropic electro conductive connector recited in Claim 1 recites substantially different features than the anisotropic electro conductive connector recited Claim 5. Applicants request that the double patenting objection be withdrawn.

Applicants respectfully traverse the rejection of the claims under 35 U.S.C. § 102(e) and § 103(a) for the following reasons.

Claim 1 is directed to an anisotropic conductive connector device. The device includes, *inter alia*, a sheet-like connector in which an insulating sheet is provided with a plurality of electrode structures extended in a direction of a thickness thereof. The sheet-like connector is provided integrally on an anisotropic conductive film in a state in which each of

[7] See specification at page 12, lines 1-4.
[8] See specification at page 55, lines 17-22.
[9] See specification at page 16, lines 14-23.

the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film.

Turning now to the applied reference, Fig. 4 of Kokubo illustrates an anisotropic electro conductive connector, which is composed of an anisotropic conductive film 20 that has plural conductive parts 22 that are extended in the thickness direction of the connector and are disposed by a constant pitch, and a main supporting body 10 to support the portion at the periphery edge of anisotropic conductive film 20.[10]

The anisotropic conductive film 20 is obtained with die 60 through the process shown in Fig. 5 to Fig. 10. After the conductive film 20 is formed, as shown in Figures 11 and 12 of Kokubo, the conductive film 20 is superimposed on a sheet-like connector 40 having an electrode structure 42.

Claim 1 is distinguishable over Kokubo as the applied reference fails to disclose or suggest a *sheet-like connector provided integrally on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film*. As discussed above, the conductive film 20 is superimposed on a sheet-like connector 40 having an electrode structure 42. Thus, the anisotropic conductive film 20 is used in the state that each electrode structure 42 of sheet-like connector 40 *is disposed respectively in the conductive path formation part 22* of anisotropic conductive film 20, which is different from a *sheet-like connector provided integrally on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions* as required by Claim 1.

The outstanding Official Action acknowledges that Kukobo fails to disclose or suggest "the insulating portion of the anisotropic conductive film is provided with a protruded portion for coupling which is protruded from a surface thereof, and the protruded

[10] See Kokubo at column 14, line 46 to column 15, line 19.

portion for coupling in the anisotropic conductive film is inserted in the through hole for coupling in the sheet-like connector" as recited in amended Claim 1.[11] To cure this deficiency, the outstanding Official Action relies on Naoi.

Figures 1 and 2 of Naoi illustrate an anisotropic conductive sheet. Figure 3 of Naoi illustrates a method of manufacturing the anisotropic conductive sheet.

That is, as shown in Figure 3 of Naoi, after an electro conductive paste 15 is applied on a lower die 14 to correspond to hole openings 31 formed in a metallic frame 30, guide pins 14a, formed in the four corners of die 14, are inserted into location holes 30a. The location holes 30a are formed in the four corners of the metallic frame 30.[12]

As a result, the metallic frame 30 is positioned and joined together with an upper die 13. The joined body of the upper die 13 and the lower die 14 is disposed in a magnetizer having a heater 17, as shown in Figure 5 of Naoi. In the magnetizer, the magnetic particles of electro conductive paste 15 are aligned in the thickness direction of the metallic frame 30, and the paste 15 is cured so that a plurality of anisotropic conductive sheet structural shown in Figures 1 and 2 are manufactured simultaneously. Therefore, as a result of this process, the guide pins 14a of die 14 and location holes 30a of metallic frame 30 of Naoi are fixed to the metallic frame 30 in the die.[13]

The outstanding Official Action identifies the guide pins 14a of Naoi as Applicants' claimed protruded portion. However, the guide pins 14a are merely used to fix the metallic frame 30 with the die 14. Naoi neither discloses nor suggests that the metallic frame 30 is an anisotropic conductive film or a sheet-like connector. Accordingly, Naoi neither discloses nor suggests that the guide pins 14a are used for *coupling in an anisotropic conductive film* and *are inserted in a through hole for coupling in a sheet-like connector* as required by Claim 1.

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[11] See Official Action of March 2, 2007 at page 6, paragraph 10.
[12] See Naoi at column 8, line 56 to column 9, line 18.
[13] See Naoi at column 9, line 57 to column 10, line 5.

More particularly, Naoi does not teach or suggest the constructions of Applicants' present invention that the sheet-like connector 20 is provided integrally on the anisotropic conductive film 10A in such a manner that the protruded portion 15 for coupling in the anisotropic conductive film 10A is inserted in the through hole 26 for coupling in the insulating sheet 21.

Accordingly, Applicants submit that Kokubo and Naoi fail to disclose or suggest all the features of Claim 1. Applicants respectfully request that the rejection of Claim 1, and the claims depending therefrom, under 35 U.S.C. § 102(e) and § 103(a) be withdrawn.

Claim 5 is directed to an anisotropic conductive connector device. The anisotropic conductive connector device includes, *inter alia*, a sheet-like connector in which an insulating sheet is provided with a plurality of electrode structures extended in a direction of a thickness thereof. The sheet-like connector is integrated on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film.

As discussed above, Kokubo describes a conductive film 20 that is superimposed on a sheet-like connector 40 having an electrode structure 42. However, Kokubo fails to disclose or suggest that the sheet-like connector 40 *is integrated on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film* as required by Claim 5.

Accordingly, Applicants submit that Kokubo fails to disclose or suggest all the features of Claim 5. Thus, Applicants respectfully request that the rejection of Claim 5, and the claims depending therefrom, under 35 U.S.C. § 102(e) over Kokubo be withdrawn.

Applicants further submit that the sheet-like connector 40 of Kokubo presents the following problems as described in the "Background Art" of Applicants' specification.

That is, the alignment of the anisotropic conductive sheet with the sheet-like connector is carried out by forming a positioning hole in the respective peripheral edge portions or fixing the respective peripheral edge portions to frame-shaped supporting bodies having the positioning holes and inserting a common guide pin through the respective positioning holes.

However, when the pitches of the electrode structure of the sheet-like connector and the conducting path forming portion of the anisotropic conductive sheet are reduced, it is harder to reliably align both of them.

Moreover, once a desirable alignment is implemented, the positional shift of the conducting path forming portion and the electrode structure is generated when the connector device is used. In the case in which the connector device is tested in a high temperature environment, for example, a burn-in test, the positional shift is generated between the electrode structure of the sheet-like connector and the conducting path forming portion of the anisotropic conductive sheet due to a difference in a thermal expansion between a material for forming the anisotropic conductive sheet and a material for forming an insulating sheet of the sheet-like connector. As a result, a problem exists in that an excellent electrical connection state cannot be maintained stably.

On the other hand, as discussed above with regard to the objections of the claims under 37 C.F.R. § 1.75, the anisotropic conductive connector device 10 of amended Claim 1 is constituted by a rectangular anisotropic conductive film 10A, a sheet-like connector 20 provided integrally on one surface of the anisotropic conductive film 10A and a rectangular plate-shaped supporting body 30 which supports the anisotropic conductive film 10A.

Moreover, the anisotropic conductive connector device 10 according to amended Claim 5 is constituted by a rectangular anisotropic conductive film 10A, a sheet-like connector 20 provided integrally on one surface of the anisotropic conductive film 10A and a

rectangular plate-shaped supporting body 30, which supports the anisotropic conductive film 10A.

According to the anisotropic conductive connector device 10 in accordance with Claim 1, the sheet-like connector 20 is provided integrally on the anisotropic conductive film 10A. Therefore, it is not necessary to align the sheet-like connector 20 with the anisotropic conductive film 10A. Even if the pitch of the electrode to be a connecting object is small, an excellent electrical connection state can be obtained. In addition, also in the case of repetitive use for a long period of time or the case of use in a high temperature environment, the positional shift of the conducting path forming portion 11 from the electrode structure 22 can be prevented from being generated. Accordingly, it is possible to stably maintain an excellent electrical connection state in the claimed invention.

Moreover, the protruded portion 15 for coupling, which is formed on the anisotropic conductive film 10A, is inserted in the through hole 26 for coupling which is formed on the insulating film 21 in the sheet-like connector 20. Therefore, the positional shift of the conducting path forming portion 11 from the electrode structure 22 can be reliably prevented. In addition, according to the anisotropic conductive connector device 10 of Claim 5, it is not necessary to align the sheet-like connector 20 with the anisotropic conductive film 10A.

Even if the pitch of an electrode to be a connecting object is small, consequently, an excellent electrical connection state can be obtained. In addition, also in the case of repetitive use for a long period of time or the case of use in a high temperature environment, the positional shift of the conducting path forming portion 11 from the electrode structure 22 is not generated. Accordingly, it is possible to maintain a stable and excellent electrical connection state.

Moreover, the insulating sheet 21 in the sheet-like connector 20 is constituted by the insulating sheet 21 formed by the mesh, the nonwoven fabric or the porous sheet in which the

void communicating with both sides of the insulating sheet is formed. Therefore, the positional shift of the conducting path forming portion 11 from the electrode structure 22 can be prevented still more reliably.

Accordingly, as these features and the functions/effects of Applicants' device are not disclosed in Kokubo nor Naoi, Applicants submit that Applicants' claimed invention patentably distinguishes over Kokubo and Naoi.

Turning now to Weiss, Figures 1 and 2 of Weiss illustrate anisotropic conductive elastomers (ACE) 16 and 18 disposed between circuit boards 12 and 14. Weiss also describes a substrate 20 sandwiched between ACE 16 and 18.[14] Lands 22 and 24 are coupled electrically to the substrate 20 through a short-circuited part such as plated through holes 50. As a result, pad 26 of circuit board 12 and pad 28 of circuit board 14 are electrically connected.[15]

Claim 1 is distinguishable over Weiss as the applied reference fails to disclose or suggest a *sheet-like connector provided integrally on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film*. The outstanding Official Action identifies the lined up small circles in Figures 1 and 2 of Weiss as Applicants' claimed *plurality of conducting path forming portions*.[16]

However, the structures 22, 24, and 50 of Weiss are not provided on *each of the conducting path forming portions* as required by Claim 1. Figures 1 and 2 of Weiss merely illustrate that when the ACE's 16 and 18 are composed, they are superposed and used in the state that each electrode structure (22, 24, 50) is on or adjacent to substrate 20 instead of *on each of the conducting path forming portions*. Furthermore, Applicants submit that the

[14] See Weiss at column 2, lines 50-59.
[15] See Weiss at column 2, lines 50-59 and column 3, lines 3-5.
[16] See Official Action of March 2, 2007 at page 5, paragraph 8.

disadvantages as described in the "Background Art" section of Applicants' specification are present in the configuration of the ACE's 16 and 18 of Weiss.

Accordingly, Applicants submit that Weiss fails to disclose or suggest all the features of Claim 1. Thus, Applicants respectfully request that the rejection of Claim 1, and the claims depending therefrom, under 35 U.S.C. § 102(e) over Weiss be withdrawn.

Claim 5 is distinguishable over Weiss as the applied reference fails to disclose or suggest *a sheet-like connector integrated on the anisotropic conductive film in a state in which each of the electrode structures is positioned on each of the conducting path forming portions of the anisotropic conductive film.* Figures 1 and 2 of Weiss illustrate that electrode structures 22, 24, and 50 are merely provided on or adjacent to substrate 20 instead of on *each conducting path forming portion.*

Accordingly, Applicants submit that Weiss fails to disclose or suggest all the features of Claim 5. Thus, Applicants respectfully request that the rejection of Claim 5, and the claims depending therefrom, under 35 U.S.C. § 102(e) over Weiss be withdrawn.

Consequently, in view of the foregoing discussion and present amendment, it is respectfully submitted that this application is in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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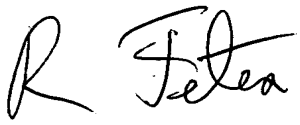

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